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NUMERICAL METHOD FOR GROUNDWATER HYDRAULICS

Robert L. Crim

Environmental Protection Agency
Annapolis, Maryland

February 1972

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Annapolis Field Office
Environmental Protection Agency
Region III
February 1972

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INTRODUCTION

With the advent of large high-speed computers, many problems in fluid mechanics and groundwater hydraulics can be solved or "re-solved" using only basic principles. The need for highly skilled people to do essentially simple problems has been and is being eased more and more often.

Historically, the solutions to problems in groundwater hydraulics have been with applications of complex variables and conformal mapping. This has been in the attempt to obtain closed solutions to some specific problems.

The program presented here is an application to many of the same problems using only Darcy's Law and the continuity equation. The program was verified against an analytical solution to a single well field.

The equations:

Darcy's Law: $v = -K \frac{dh}{dl}$

where v is the apparent flow velocity

K is the permeability

$\frac{dh}{dl}$ is the hydraulic gradient

Continuity:

$$\frac{dV}{dt} = \sum Qin - \sum Qout$$

where Q is the flow into or out of a volume V during time dt.

Discrete forms:

Darcy's Law becomes: $v = K \frac{H_1 - H_2}{L}$

where H_1 and H_2 are the heads at each end of the "channel."

Continuity becomes:

$$H = \frac{(\sum Qin - \sum Qout)}{As} \Delta t$$

where As is the "surface area" of a "junction."

Then:

$$H_t = H_{t-1} + \Delta H_t$$

Certain characteristics are defined as belonging to junctions and others belonging to channels:

1. Junctions

   Head
   Surface Area
   Porosity

2. Channels

   Flow
   Cross-sectional area
   Permeability
   Depth
   Length
   Width

Of all the variables above, only surface area, channel length, and width are constant in time. The others vary in the following algorithm:

The Algorithm:

Start:

1. Compute half-step velocities and flows for all channels.

2. Compute half-step values of heads for all junctions.

3. Compute half-step cross sections for all channels.

4. Compute full-step velocities and flows for each channel.

5. Compute full-step heads at each junction.

6. Compute full-step cross sections and depths in each channel.

7. Compute full-step surface areas at each junction.

Certain comments can be made for clarification:

a. Depth and surface area are computed only on the full step.

b. A trap in the program sets the velocity and flow of a channel to zero when its depth becomes less than 0.5 feet.

c. The run will abort if any velocity exceeds 20 feet per second in any channel.

d. The full-step value of time is presently 2 hours. Additional experience may call for more or less time as the problem may require.

e. Certain heads may be held constant. Computation for these is bypassed.

SAMPLE PROBLEMS

The program was run on two problems to demonstrate its validity. The remaining runs serve to show the flexibility of the approach.

All the runs were made on an unconfined aquifer of medium size sand. The channel and junction data are as follows:

Channel data:

1. Length = 1,000 feet
2. Depth = 100 feet
3. Width = 500 feet
4. Area = 50,000 square feet
5. Permeability = 1.0 cm/sec

Junction data:

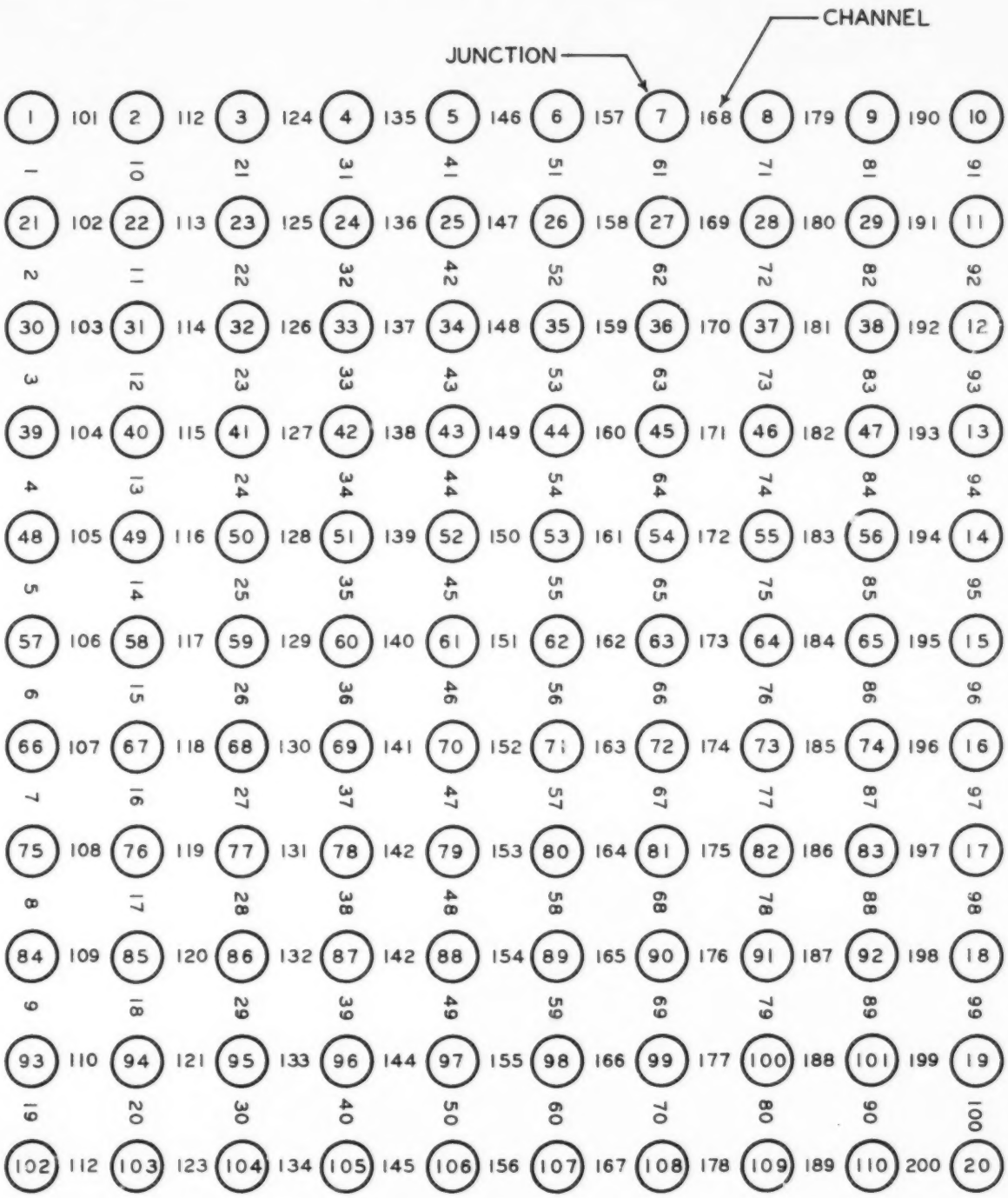
1. Starting head = 100.0 feet
2. Surface area:
   a. Interior = 1.0×10^6 square feet
   b. Exterior = 7.5×10^5 square feet
   c. Corner = 5.0×10^5 square feet
3. Porosity = 40 percent

RUN DESCRIPTIONS

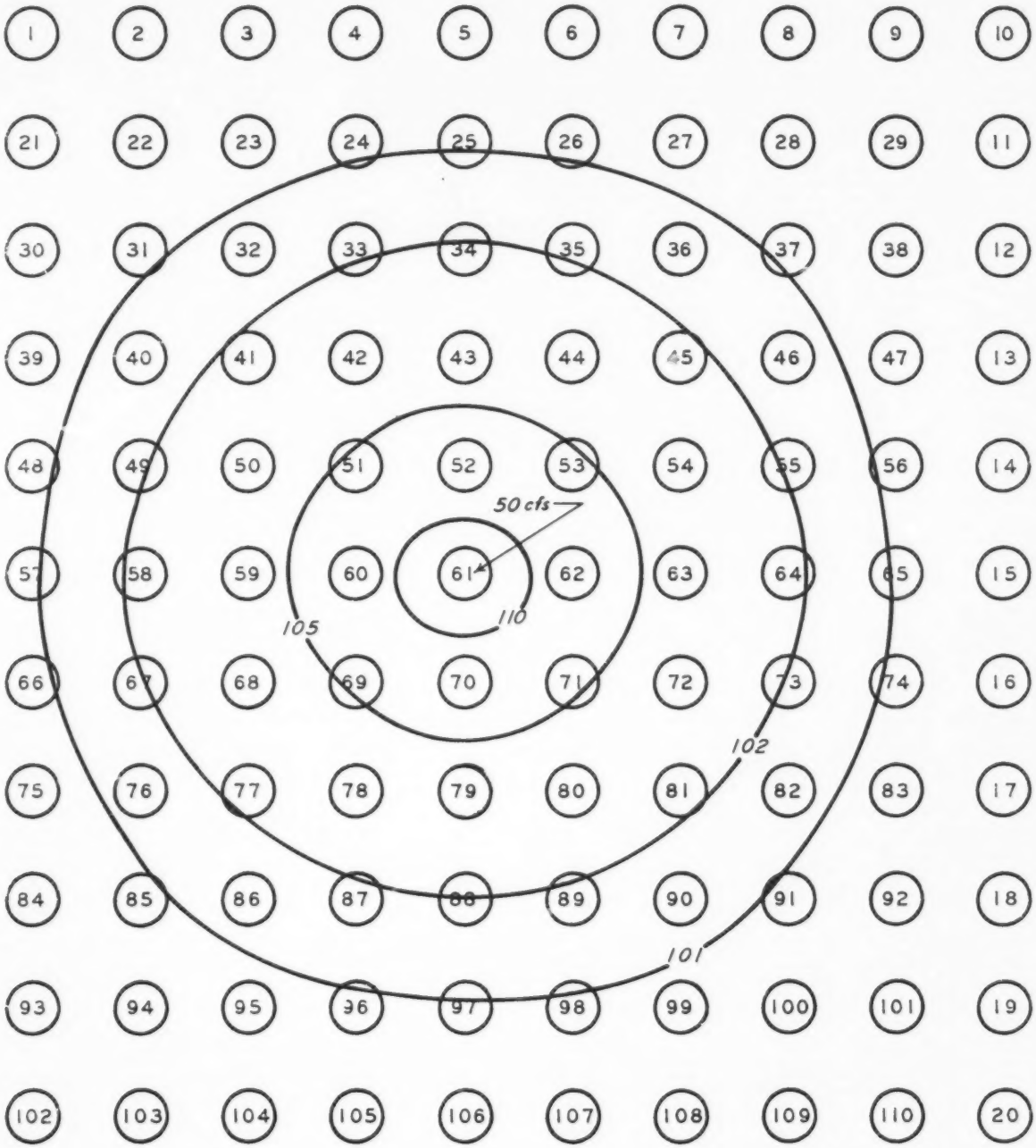
Run Number	Description
1	A simple recharge well. Q = 50 cfs in at junction 61. All rim heads fixed at 100.0 feet.
2	A discharge well at #61. Q = 50 cfs out. All rim heads fixed at 100.0 feet.
3	Well interference test 50 cfs in at junction 42. 50 cfs out at junction 81. All rim heads fixed at 100.0 feet.
4	One edge of aquifer fixed at 100.0 feet. Ten cfs withdrawn from each junction on the opposite edge.
5	Same as #4 but with 50 cfs. Discharge well at junction 61.
6	One edge fixed at 100.0 feet opposite edge fixed at 0.0 feet. This run demonstrates seepage and free surface shape.

The results of the test runs are shown in the following figures. Contour diagrams are included where their use is needed to clearly show the results.

MASTER NETWORK CHART



RUN # 1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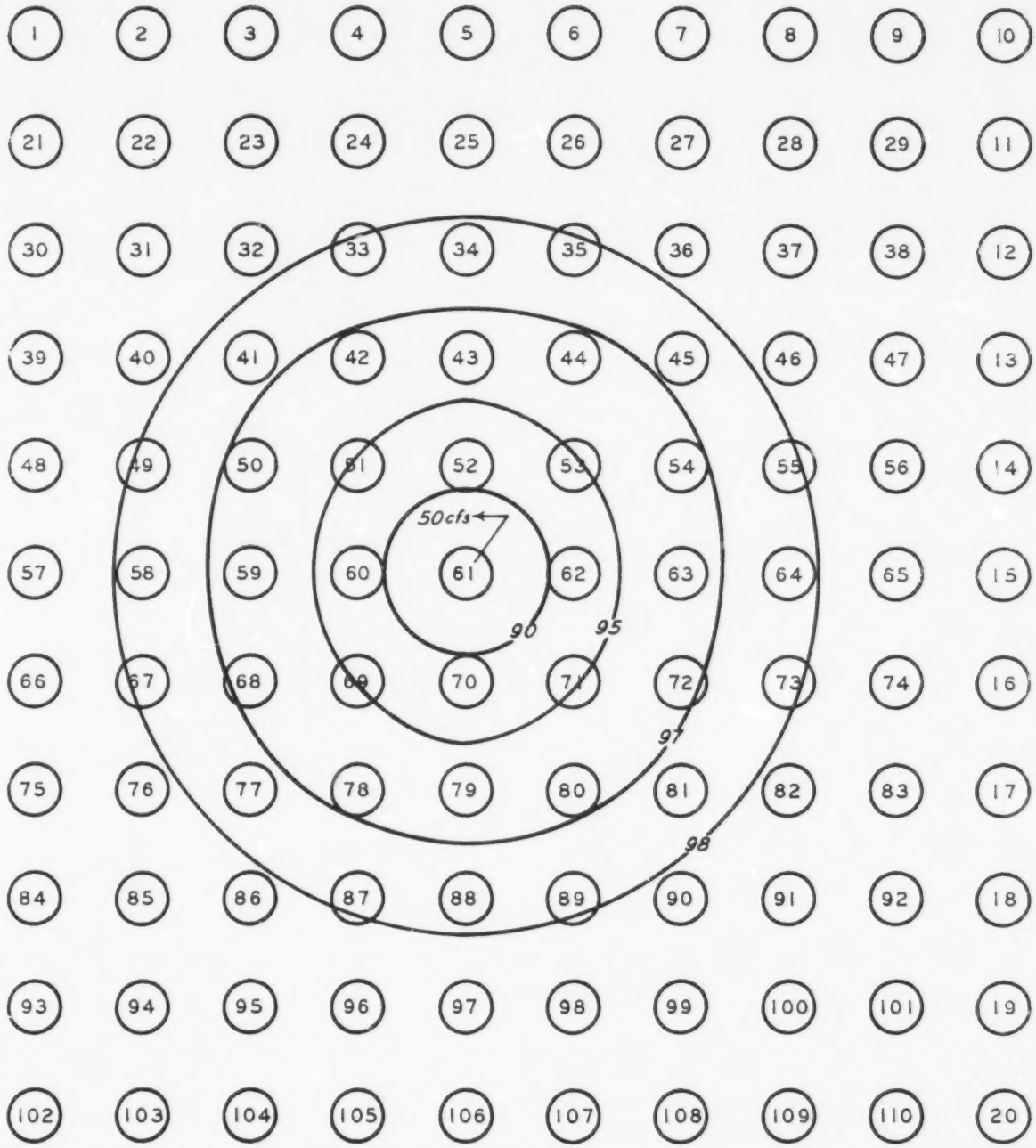
RUN # 2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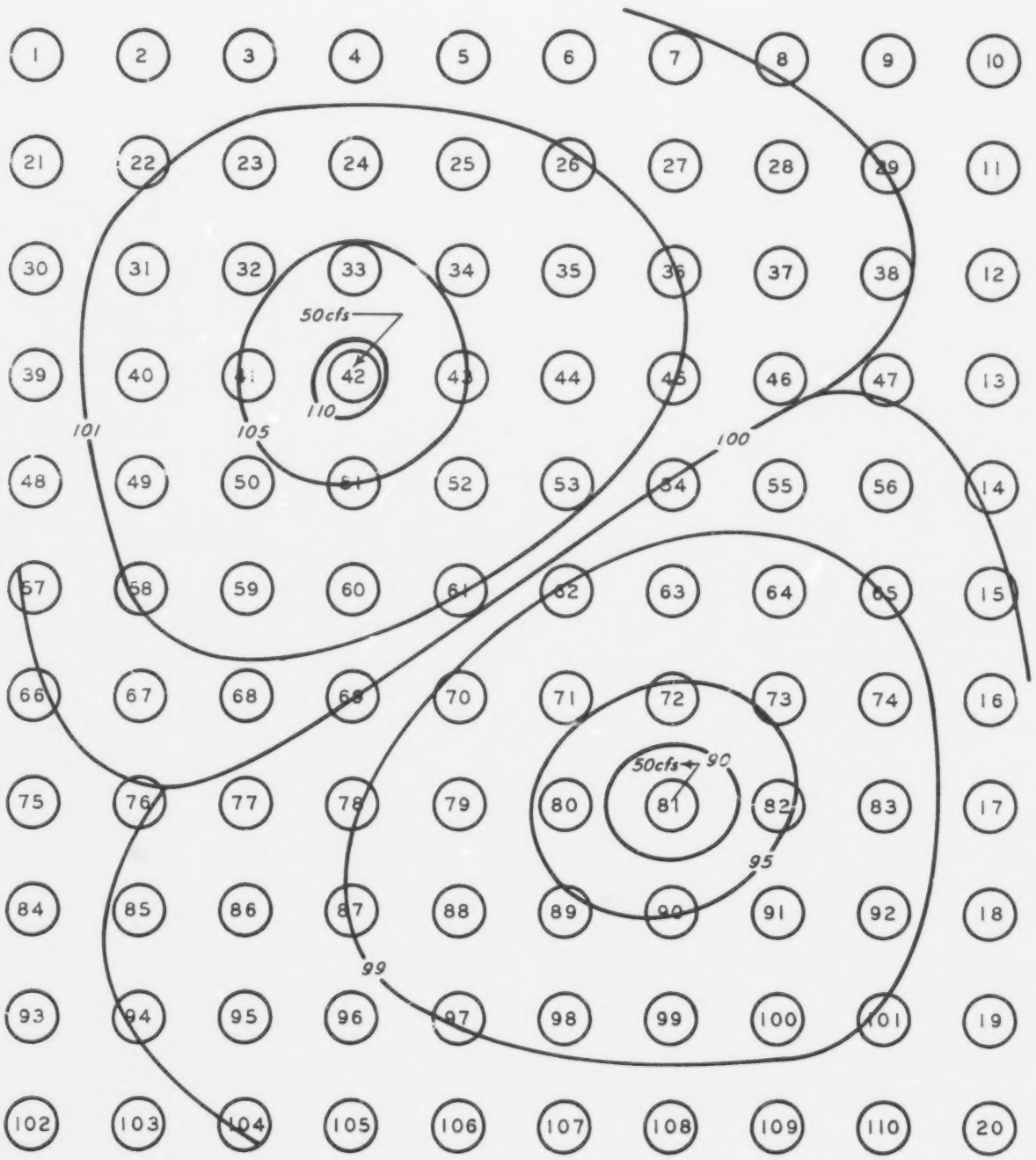
RUN # 3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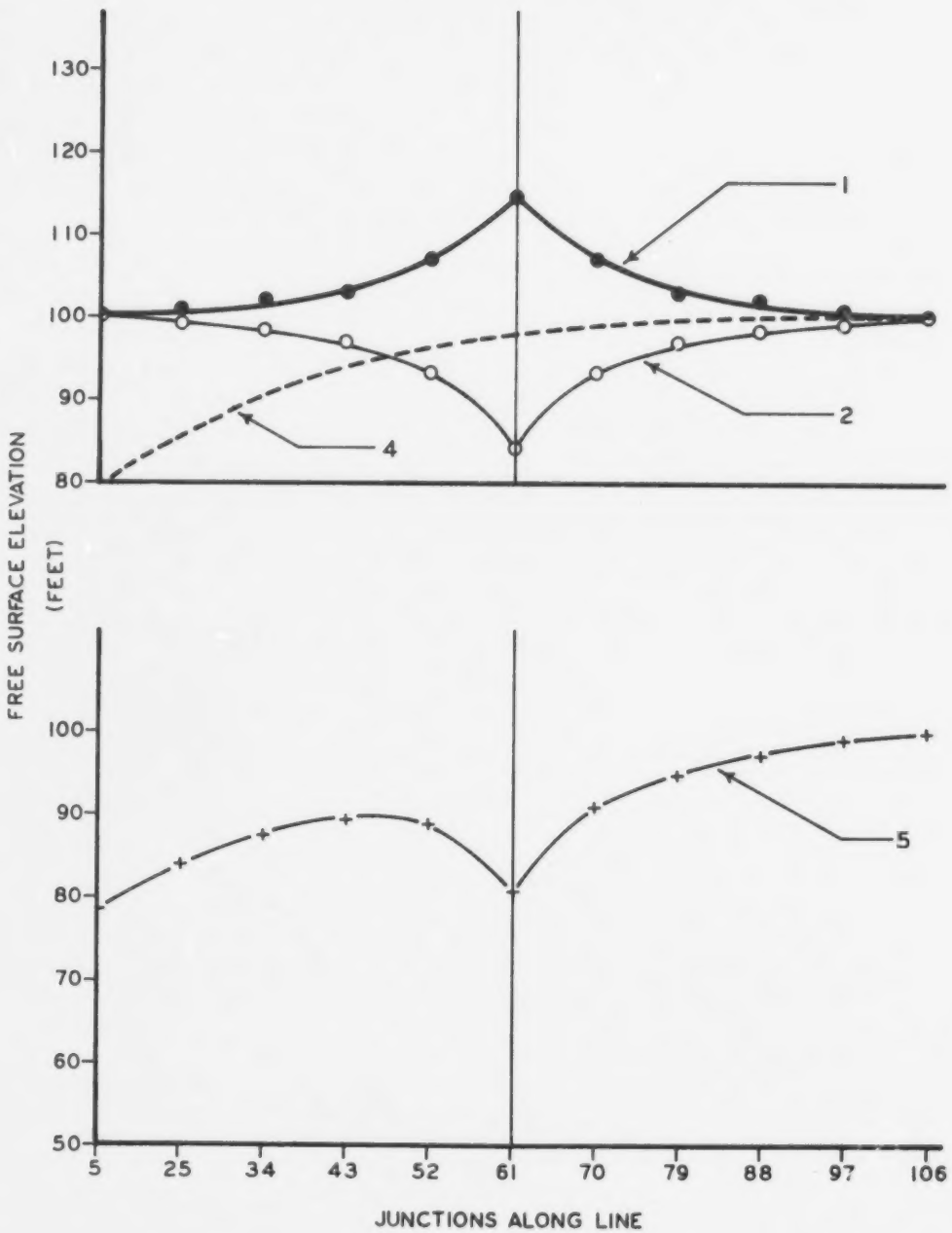
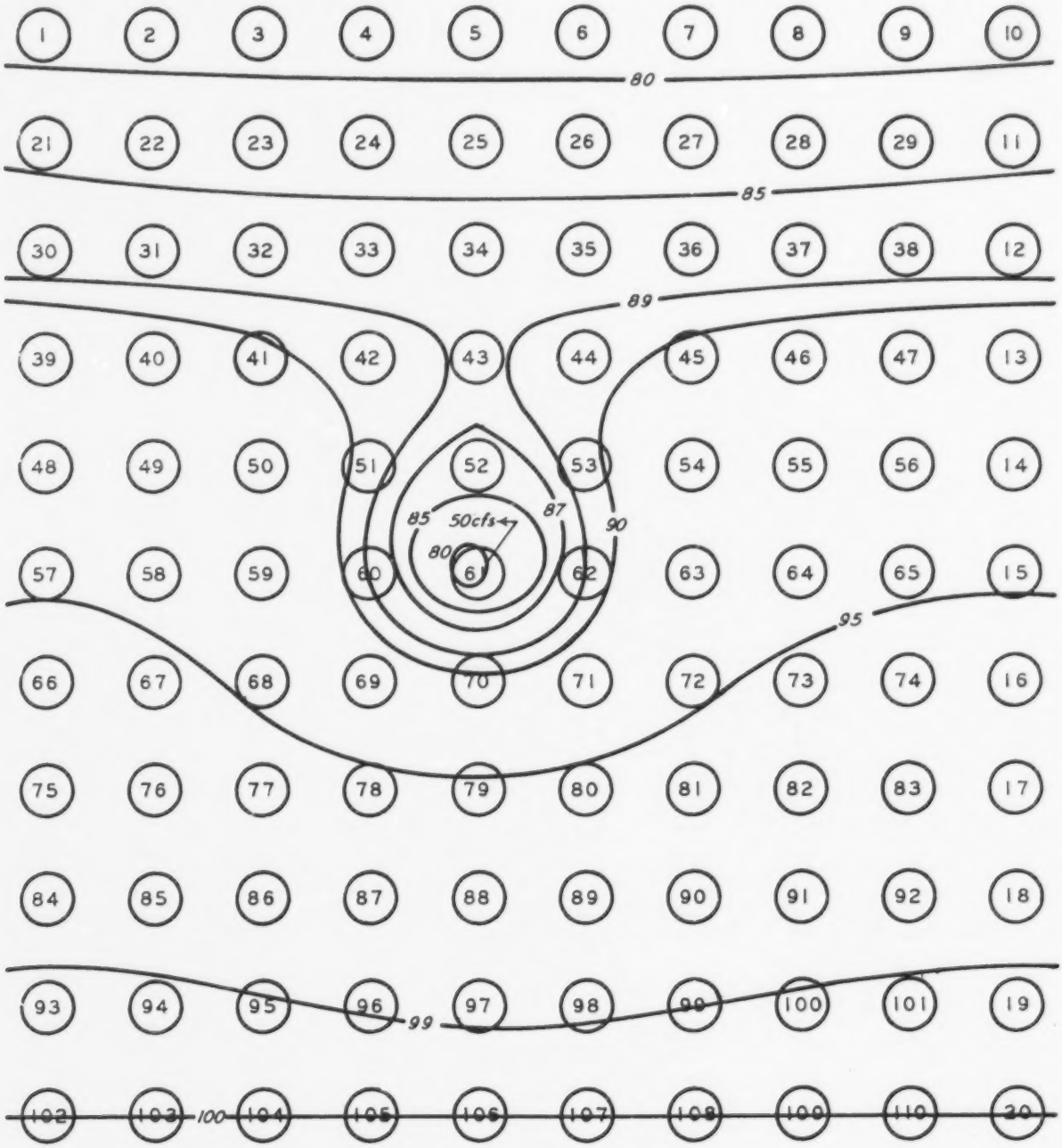
WATER SURFACE ELEVATIONS FOR RUNS 1,2,4,5



RUN # 5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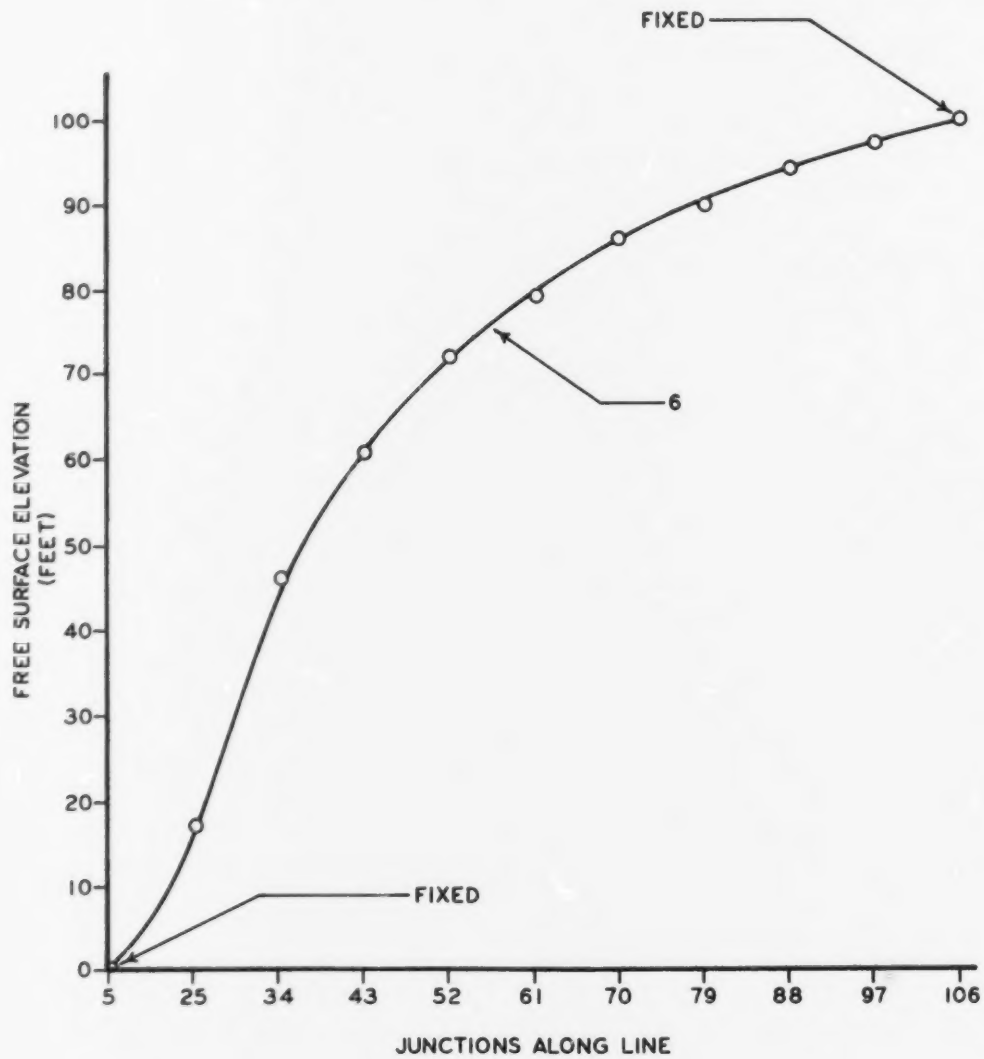
WATER SURFACE ELEVATION FOR RUN 6



Flows in the aquifer are obtained from the computer output. Since the aquifer has been segmented into right angled channels, the flow through the channels should be considered as vector components. A radical network is, of course, possible; but the results would not vary from those already obtained.

A note concerning the sign convention is in order. Positive flow and velocity is defined as flow from a low numbered junction to a higher numbered junction. Negative flow is the opposite. Thus in the diagram, flow in both channels is in the same direction, but the Q's are opposite in sign.

Comparison of results:

Using the equations for a completely penetrating well:

$$Q = 2\pi r K h \frac{dh}{dr}$$

Integrating:

$$Q = \pi K \frac{h_o^2 - hw^2}{\ln \left(\frac{r_o}{r_w}\right)}$$

where r_o is the "radius of influence"

r_w is the drawdown at the well

h_o is the water table elevation at the "radius of influence"

let r_w = 1 foot

$$h_o^2 - h_w^2 = \frac{Q \ln(\frac{r_o}{r_w})}{\pi K}$$

$$h_w^2 = h_o^2 - \frac{Q \ln(\frac{r_o}{r_w})}{\pi K}$$

$$h_w^2 = (100.0)^2 - \frac{50 \ln(\frac{5000}{1})}{(3.14)(\frac{1}{12.0*2.54})}$$

h_w = 83 feet

For a recharge well only the sign of Q is changed.

$$h_w^2 = h_o^2 + \frac{Q \ln(\frac{r_o}{r_w})}{\pi K}$$

h_w = 115 feet

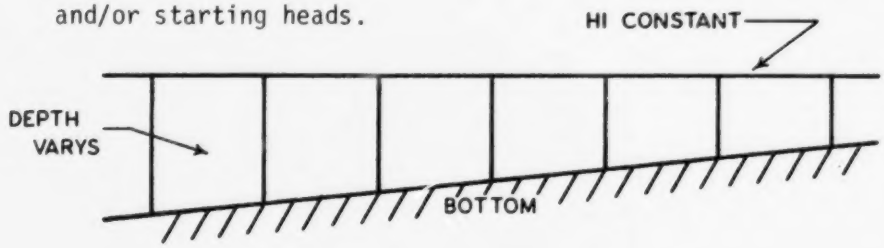
These values compare with the computer results (84 feet and 114 feet) within 1 percent.

The two verification runs (Numbers 1 and 2) show the model to be quite close to the analytical situation. For want of a better number, the well radius, r_w, was defined as unity.

Program Flexibility:

By the use of the flexible nature of the input quantities, many types of problems can be solved.

Seepage from a stream could be simulated by fixing the heads along the watercourse at the elevation of the stream. Sloping aquifers are simulated by varying the channel depths and/or starting heads.



Smaller or larger grid sizes can be accommodated by lowering or raising the integration step.

Instability may occur if a large step is used on a small network. Conversely, excessive time may be required to reach a steady state when using a small step on a large network.

APPENDIX - I

(Program Operation Instructions)

Program Operation

Card deck:

Card Number 1

c.c.	
1-80	Title and/or job identification. Any characters.

Card Number 2

c.c.	Variable Name	Meaning
G-10	NCYC	Total number of compute cycles program is to make.
11-20	DELT	Integration step in seconds.
21-30	TZERO	Reference time in seconds (usually 0.0).
36-40	NPRT	Number of cycles between output printings.
41-45	IPRT	First cycle to be printed.

Cards for junction data

1-5	J	Junction number (if larger than 251, it terminates the junction data); if negative, the head at this junction is to be fixed at the starting value.
6-15	H(J)	Starting head in feet.
16-25	AS(J)	Surface area in square feet (E type format).
26-35	ASK(J)	Change in porosity per feet.
36-40	QIN(J)	Inflow to junction in cfs.

c.c.	Variable Name	Meaning
41-45	QOU(J)	Outflow from junction in cfs.
46-70	NCHAN(J,K)	Channel numbers entering junction 515 format.
71-75	VOID(J)	Porosity in decimal form.
Cards for channel data		
1-5	N	Channel number (N greater than 350 means end of deck).
6-15	LEN(N)	Channel length.
16-25	B(N)	Channel width.
26-35	A(N)	Channel area.
36-45	AK(N)	Permeability.
46-55	V(N)	Starting velocity.
56-65	R(N)	Channel depth.
66-70		Junctions at channel ends.
71-75		Junctions at channel ends.

APPENDIX - II

(Program Listing)

```
$END OF OUTPUT


// EXEC  FGLNKGO,PARM.FORT='NOSOURCE,NOMAP'
//FORT.SYSIN DD *
      DIMENSION ALPHA(20),NCHAN(250,5),LST(250),VOID(250),NTEMP(5),H(250
     1),HT(250),HN(250),AS(250),ASK(250),QIN(250),QOU(250),LEN(350),
     2R(350),A(350),AT(350),V(350),VT(350),Q(350),AK(350),NJUNC(350,2),
     3P(350)
      INTEGER ALPHA
      REAL LEN
C                     CONTROL DATA
      READ(1,100) (ALPHA(I),I=1,20)
  100 FORMAT (20A4)
      READ(1,105) NCYC,DELT,TZERO,KCYC,NPRT,IPRT,PERIOD
  105 FORMAT(5X,I5,2F10.0,3I5,F10.0)
      DO 9003 I=1,250
      H(I)=0.0
      LST(I)=0
      DO 9003 J=1,5
 9003 NCHAN(I,J)=0
      DO 9004 I=1,350
      V(I)=0.0
      Q(I)=0.0
      DO 9004 J=1,2
 9004 NJUNC(I,J)=0
      NJ=0
      DO 121 I=1,250
      READ(1,120) J,HEAD,SURF,SLOPE,QF1,QF2,(NTEMP(K),K=1,5),VOYD
  120 FORMAT(I5,F10.0,E10.0,F10.0,2F5.0,5I5,F5.0)
      IF(J.GT.250) GO TO 1122
      IF(J.GT.0)  GO TO 122
      J=-J
      LST(J)=1
  122 IF(J.GT.NJ) NJ=J
      H(J)=HEAD
      AS(J)=SURF
      ASK(J)=SLOPE
      QIN(J)=QF1
      QOU(J)=QF2
      VOID(J)=VOYD
      DO 2101 M=1,5
      NCHAN(J,M)=NTEMP(M)
 2101 CONTINUE
  121 CONTINUE
 1122 CONTINUE
C                     CHANNEL DATA
      NC=0
      DO 131 I=1,350
      READ(1,130)N,ALEN,WIDE,AREA,PERM,VEL,DEEP,(NTEMP(K),K=1,2)
  130 FORMAT(I5,6F10.0,2I5)
      IF(N.GT.350) GO TO 1132
      IF(N.GT.NC) NC=N
      LEN(N)=ALEN
      R(N)=WIDE
      A(N)=AREA
      P(N)=DEEP
      AK(N)=PERM
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      V(N)=VEL
      NJUNC(N,1)=MINO(NTEMP(1),NTEMP(2))
      NJUNC(N,2)=MAXO(NTEMP(1),NTEMP(2))
  131 CONTINUE
 1132 CONTINUE
C                     CHECK NETWORK
      NEXIT=0
      DO 150 N=1,NC
      DO 150I=1,2
      IF(NJUNC(N,I).LE.0) GO TO 150
      J=NJUNC(N,I)
      DO 140 K=1,5
      IF(N.EQ.NCHAN(J,K)) GO TO 150
  140 CONTINUE
      NEXIT=NEXIT+1
      WRITE(3,145) N,J
  145 FORMAT(1H0,28H COMPATIBILITY CHECK CHANNEL ,I4,9H JUNCTION ,I4)
  150 CONTINUE
      DO 170 J=1,NJ
      DO 165 K=1,5
      IF(NCHAN(J,K).LE.0) GO TO 170
      N=NCHAN(J,K)
      DO 160 I=1,2
      IF(J.EQ.NJUNC(N,I)) GO TO 165
  160 CONTINUE
      NEXIT=NEXIT+1
      WRITE(3,145) N,J
  165 CONTINUE
  170 CONTINUE
      IF(NEXIT.NE.0)   CALL EXIT
C                     WRITE OUTPUT INFORMATION
      WRITE(3,101) (ALPHA(I),I=1,20)
  101 FORMAT(1H1,20A4)
      WRITE(3,1104) NCYC
 1104 FORMAT(1H0,29H NUMBER OF INTEGRATION CYCLES  ,I5)
      WRITE(3,1106) DELT
 1106 FORMAT(1H0,27H LENGTH OF INTEGRATION STEP ,F9.0,8H SECONDS  )
      WRITE(3,1108) TZERO
 1108 FORMAT(1H0,13H INITIAL TIME  ,F6.2,6H HOURS  )
      WRITE(3,1110) NPRT,IPRT
 1110 FORMAT(1H0,21H OUTPUT PRINTED EVERY ,I4,29H CYCLES BEGINNING WITH
     1CYCLE  ,I5)
      WRITE(3,123) NJ
  123 FORMAT(1H1,24H MAXIMUM JUNCTION NUMBER  ,I5)
      WRITE(3,1024)
 1024 FORMAT(1H ,8HJUNCTION,7X,7HINITIAL,5X,7HSURFACE,4X,8HPOROSITY,11X,
     16HINFLOW,4X,7HOUTFLOW,7X,26HCHANNELS ENTERING JUNCTION,3X,
     A 8HPOROSITY,5X,4HCODE,
     2 /,18X,4HHEAD,8X,4HAREA,6X,5HSLOPE,13X,5H(CFS),5X,5H(CFS),49X,
     3  7H1=FIXED,/,18X,4H(FT),7X,6H(SQFT),87X,6H0=FREE)
      DO 125 J=1,NJ
      IF(NCHAN(J,1).LE.0) GO TO 125
      WRITE(3,124)J,H(J),AS(J),ASK(J),QIN(J),QOU(J),(NCHAN(J,K),K=1,5),
     1  VOID(J) ,LST(J)
  124 FORMAT(1H ,I7,F13.2,2(3X,1PE12.5),2X,0PF10.1,4X,5I6,F10.5,5X,I5)
  125 CONTINUE
      WRITE(3,133)  NC
  133 FORMAT(1H1,23H MAXIMUM CHANNEL NUMBER  ,I5)
      WRITE(3,1034)
 1034 FORMAT(1H ,7HCHANNEL,3X,6HLENGTH,3X,5HWIDTH,5X,4HAREA,3X,5HPERM.,
     17X,7HINITIAL,6X,
     17HINITIAL,9X,17HJUNCTIONS AT ENDS,/,49X,8HVELOCITY,6X,5HDEPTH,/,
     211X,4H(FT),5X,4H(FT),4X,6H(SQFT),3X,8H(CM/SEC),4X,8H(FT/SEC)
     3,6X,4H(FT))
      DO 135 N=1,NC
      IF(NJUNC(N,1).LE.0)  GO TO 135
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      WRITE(3,134)N,LEN(N),B(N),A(N),AK(N),V(N),K(N),(NJUNC(N,K),K=1,2)
  134 FORMAT(1H ,I5,F11.0,F8.0,F10.0,1PE10.2,0PF10.2,F13.1,10X,2I6)
  135 CONTINUE
C                     INITIALIZE
      DELT2=DELT/2.0
      TZERO=TZERO*3600.0
      PERIOD=PERIOD*3600.0
      NCYPER=(PERIOD/DELT)+0.5
      NETCYC=NCYC-NCYPER
      T=TZERO
      KPRT=IPRT
      LTIME=0
      DO 186 J=1,NJ
      AS(J)=AS(J)*VOID(J)
      HT(J)=H(J)
      HN(J)=H(J)
  186 CONTINUE
      CHANGE=1.0/(2.54*12.0)
      DO 190 N=1,NC
      AK(N)=AK(N)*CHANGE
      AT(N)=A(N)
  190 CONTINUE
C                     MAIN LOOP
      DO 285 ICYC=1,NCYC
      T2=T+DELT2
      T=T+DELT
C                     VELOCITIES AND FLOWS AT T+DELT/2
      DO 204 N=1,NC
      IF(NJUNC(N,1).LE.0) GO TO 204
C                     CHECK FOR DRY CHANNEL
      IF(R(N).GT.0.5) GO TO 503
      VT(N)=0.0
      Q(N)=0.0
      GO TO 204
  503 NL=NJUNC(N,1)
      NH=NJUNC(N,2)
      VT(N)=-AK(N)*((H(NH)-H(NL))/LEN(N))
      Q(N)=VT(N)*A(N)
  204 CONTINUE
C                     HEADS AT T+DELT/2
      DO 225 J=1,NJ
      IF(NCHAN(J,1).LE.0) GO TO 225
      IF(LST(J).NE.0)  GO TO 225
      SUMQ=QOU(J)-QIN(J)
      DO 220 K=1,5
      IF(NCHAN(J,K).LE.0) GO TO 224
      N=NCHAN(J,K)
      IF(J.NE.NJUNC(N,1))GO TO 215
      SUMQ=SUMQ+Q(N)
      GO TO 220
  215 SUMQ=SUMQ-Q(N)
  220 CONTINUE
  224 HT(J)=H(J)-DELT2*SUMQ/AS(J)
  225 CONTINUE
C                     AREAS,VELOCITIES AND FLOWS AT T+DELT
      DO 230 N=1,NC
      IF(NJUNC(N,1).LE.0) GO TO 230
      NL=NJUNC(N,1)
      NH=NJUNC(N,2)
      DELH=(HT(NH)-H(NH)+HT(NL)-H(NL))/2.0
      RNT=R(N)+DELH
      AT(N)=A(N)+B(N)*DELH
C                     CHECK FOR DRY CHANNELS
      IF(RNT.GT.0.5)   GO TO 501
      V(N)=0.0
      Q(N)=0.0
```

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  501 CONTINUE
      V(N)=-AK(N)*((HT(NH)-HT(NL))/LEN(N))
      Q(N)=(Q(N)+V(N)*AT(N))/2.0
  230 CONTINUE
C                     HEADS AT T+DELT
      DO 255 J=1,NJ
      IF(NCHAN(J,1).LE.0) GO TO 255
      IF(LST(J).NE.0)  GO TO 255
      ASAJ=AS(J)+ASK(J)*(HT(J)-H(J))
      SUMQ=QOU(J)-QIN(J)
      DO 250 K=1,5
      IF(NCHAN(J,K).LE.0) GO TO 254
      N=NCHAN(J,K)
      IF(J.NE.NJUNC(N,1)) GO TO 245
      SUMQ=SUMQ+Q(N)
      GO TO 250
  245 SUMQ=SUMQ-Q(N)
  250 CONTINUE
  254 HN(J)=H(J)-DELT*SUMQ/ASAJ
  255 CONTINUE
C                     DEPTH AND AREAS AT T+DELT
      DO 257 N=1,NC
      IF(NJUNC(N,1).LE.0) GO TO 257
      NL=NJUNC(N,1)
      NH=NJUNC(N,2)
      DELH=0.5*(HN(NH)-H(NH)+HN(NL)-H(NL))
      R(N)=R(N)+DELH
      A(N)=A(N)+B(N)*DELH
  257 CONTINUE
C                     COMPUTE NEW SURFACE AREAS
C                     SHIFT HEADS TO H ARRAY FOR NEW CYCLE
      DO 258 J=1,NJ
      IF(LST(J).NE.0)  GO TO 258
      AS(J)=AS(J)+ASK(J)*(HN(J)-H(J))
      H(J)=HN(J)
  258 CONTINUE
C                     COMPUTE AVERAGE H,Q,V
C                     CHECK VELOCITIES FOR EXCESS
      DO 275 N=1,NC
      IF(NJUNC(N,1).LE.0)  GO TO 275
      IF(ABS(V(N)).LE.20.0) GO TO 275
      WRITE(3,270) ICYC,N,Q(N),R(N),V(N)
  270 FORMAT(1H ,33H VELOCITY EXCEEDS 20FPD IN CYCLE ,I4,8H CHANNEL ,I4,
     14H Q = ,1PF12.4,8H DEPTH = ,F7.3,4H V = ,1PE12.4)
      IF(ICYC.GT.30) GO TO 312
  275 CONTINUE
C                     PRINT OUTPUT
      IF(ICYC.NE.KPRT) GO TO 285
      KPRT=KPRT+NPRT
      IDAY=T/86400.0
      HOUR=(T-86400.0*FLOAT(IDAY))/3600.0
      LTIME=LTIME+1
      WRITE(3,320) ICYC,IDAY,HOUR
  320 FORMAT(1H1,41X,31H HYDRAULIC CONDITIONS FOR CYCLE ,I4,4H DAY,I5,
     15H HOUR,F6.2,///////)
      WRITE(3,329)
  329 FORMAT(1H ,10(11H JUNC  HEAD ,2X)/,1H ,10(7X,4H(FT),2X)/)
      WRITE(3,321) (((J,H(J)),J=I,250,25),I=1,25)
  321 FORMAT(10(I5,F7.2,1X))
      WRITE(3,322)
  322 FORMAT(1H1,5(10HCHAN  FLOW,8X,3HVEL,5X)/1H ,5(5X,5H(CFS),8X,5H(FP
     1S),3X)/)
      WRITE(3,323) (((N,Q(N),V(N)),N=I,350,70),I=1,70)
  323 FORMAT(5(I4,1H(,0PF9.4,1H),1H(,1PE9.2,1H)))
C                     END MAIN LOOP
  285 CONTINUE
```

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```
C                       TERMINATE RUN
  312 CALL EXIT
      END
/*
//GO.SYSIN DD *
   CE 223  PROJECT RUN #6  NO HEAD ALONG ONE EDGE--FREE SURFACE TEST
      501       7200        0.0     0   50     1  24.0
  - 1  100.0     5.0E05      0.0     0.0   0.0    1   101                    0.40
  - 2  100.0     7.5E05      0.0     0.0   0.0  101   112   10               0.40
  - 3  100.0     7.5E05      0.0     0.0   0.0  112   124   21               0.40
  - 4  100.0     7.5E05      0.0     0.0   0.0  124   135   31               0.40
  - 5  100.0     7.5E05      0.0     0.0   0.0  135   146   41               0.40
  - 6  100.0     7.5E05      0.0     0.0   0.0  146   157   51               0.40
  - 7  100.0     7.5E05      0.0     0.0   0.0  157   168   61               0.40
  - 8  100.0     7.5E05      0.0     0.0   0.0  168   179   71               0.40
  - 9  100.0     7.5E05      0.0     0.0   0.0  179   190   81               0.40
  -10  100.0     5.0E05      0.0     0.0   0.0  190    91                    0.40
  -11  100.0     7.5E05      0.0     0.0   0.0   91   191   92               0.40
  -12  100.0     7.5E05      0.0     0.0   0.0   92   192   93               0.40
  -13  100.0     7.5E05      0.0     0.0   0.0   93   193   94               0.40
  -14  100.0     7.5E05      0.0     0.0   0.0   94   194   95               0.40
  -15  100.0     7.5E05      0.0     0.0   0.0   95   195   96               0.40
  -16  100.0     7.5E05      0.0     0.0   0.0   96   196   97               0.40
  -17  100.0     7.5E05      0.0     0.0   0.0   97   197   98               0.40
  -18  100.0     7.5E05      0.0     0.0   0.0   98   198   99               0.40
  -19  100.0     7.5E05      0.0     0.0   0.0   99   199  100               0.40
  -20  100.0     5.0E05      0.0     0.0   0.0  100   200                    0.40
  -21  100.0     7.5E05      0.0     0.0   0.0    1   102    2               0.40
  -30  100.0     7.5E05      0.0     0.0   0.0    2   103    3               0.40
  -39  100.0     7.5E05      0.0     0.0   0.0    3   104    4               0.40
  -48  100.0     7.5E05      0.0     0.0   0.0    4   105    5               0.40
  -57  100.0     7.5E05      0.0     0.0   0.0    5   106    6               0.40
  -66  100.0     7.5E05      0.0     0.0   0.0    6   107    7               0.40
  -75  100.0     7.5E05      0.0     0.0   0.0    7   108    8               0.40
  -84  100.0     7.5E05      0.0     0.0   0.0    8   109    9               0.40
  -93  100.0     7.5E05      0.0     0.0   0.0    9   110   19               0.40
 -102  100.0     5.0E05      0.0     0.0   0.0   19   111                    0.40
 -103  100.0     5.0E05      0.0     0.0   0.0  111    20  123               0.40
 -104  100.0     5.0E05      0.0     0.0   0.0  123    30  134               0.40
 -105  100.0     5.0E05      0.0     0.0   0.0  134    40  145               0.40
 -106  100.0     5.0E05      0.0     0.0   0.0  145    50  156               0.40
 -107  100.0     5.0E05      0.0     0.0   0.0  156    60  167               0.40
 -108  100.0     5.0E05      0.0     0.0   0.0  167    70  178               0.40
 -109  100.0     5.0E05      0.0     0.0   0.0  178    80  189               0.40
 -110  100.0     5.0E05      0.0     0.0   0.0  189    90  200               0.40
   22  100.0     1.0E06      0.0     0.0   0.0   10   113   11  102           0.40
   23  100.0     1.0E06      0.0     0.0   0.0   21   125   22  113           0.40
   24  100.0     1.0E06      0.0     0.0   0.0   31   136   32  125           0.40
   25  100.0     1.0E06      0.0     0.0   0.0   41   147   42  136           0.40
   26  100.0     1.0E06      0.0     0.0   0.0   51   158   52  147           0.40
   27  100.0     1.0E06      0.0     0.0   0.0   61   169   62  158           0.40
   28  100.0     1.0E06      0.0     0.0   0.0   71   180   72  169           0.40
   29  100.0     1.0E06      0.0     0.0   0.0   81   191   82  180           0.40
   31  100.0     1.0E06      0.0     0.0   0.0   11   114   12  103           0.40
   32  100.0     1.0E06      0.0     0.0   0.0   22   126   23  115           0.40
   33  100.0     1.0E06      0.0     0.0   0.0   32   137   33  126           0.40
   34  100.0     1.0E06      0.0     0.0   0.0   42   148   43  137           0.40
   35  100.0     1.0E06      0.0     0.0   0.0   52   159   53  148           0.40
   36  100.0     1.0E06      0.0     0.0   0.0   62   170   63  159           0.40
   37  100.0     1.0E06      0.0     0.0   0.0   72   181   73  170           0.40
   38  100.0     1.0E06      0.0     0.0   0.0   82   192   83  181           0.40
   40  100.0     1.0E06      0.0     0.0   0.0   12   115   13  104           0.40
   41  100.0     1.0E06      0.0     0.0   0.0   23   127   24  115           0.40
   42  100.0     1.0E06      0.0     0.0   0.0   33   138   34  127           0.40
   43  100.0     1.0E06      0.0     0.0   0.0   43   149   44  138           0.40
   44  100.0     1.0E06      0.0     0.0   0.0   53   160   54  149           0.40
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 45  100.0      1.0E06   0.0     0.0     0.0     63  171     64  160      0.40
 46  100.0      1.0E06   0.0     0.0     0.0     73  182     74  171      0.40
 47  100.0      1.0E06   0.0     0.0     0.0     83  193     84  182      0.40
 49  100.0      1.0E06   0.0     0.0     0.0     13  116     14  105      0.40
 50  100.0      1.0E06   0.0     0.0     0.0     24  128     25  116      0.40
 51  100.0      1.0E06   0.0     0.0     0.0     34  139     35  128      0.40
 52  100.0      1.0E06   0.0     0.0     0.0     44  150     45  139      0.40
 53  100.0      1.0E06   0.0     0.0     0.0     54  161     55  150      0.40
 54  100.0      1.0E06   0.0     0.0     0.0     64  172     65  161      0.40
 55  100.0      1.0E06   0.0     0.0     0.0     74  183     75  172      0.40
 58  100.0      1.0E06   0.0     0.0     0.0     14  117     15  106      0.40
 56  100.0      1.0E06   0.0     0.0     0.0     84  194     85  183      0.40
 59  100.0      1.0E06   0.0     0.0     0.0     25  129     26  117      0.40
 60  100.0      1.0E06   0.0     0.0     0.0     35  140     36  129      0.40
 61  100.0      1.0E06   0.0     0.0     0.0     45  151     46  140      0.40
 62  100.0      1.0E06   0.0     0.0     0.0     55  162     56  151      0.40
 63  100.0      1.0E06   0.0     0.0     0.0     65  173     66  162      0.40
 64  100.0      1.0E06   0.0     0.0     0.0     75  184     76  173      0.40
 65  100.0      1.0E06   0.0     0.0     0.0     85  195     86  184      0.40
 67  100.0      1.0E06   0.0     0.0     0.0     15  118     16  107      0.40
 68  100.0      1.0E06   0.0     0.0     0.0     26  130     27  118      0.40
 69  100.0      1.0E06   0.0     0.0     0.0     36  141     37  130      0.40
 70  100.0      1.0E06   0.0     0.0     0.0     46  152     47  141      0.40
 71  100.0      1.0E06   0.0     0.0     0.0     56  163     57  152      0.40
 72  100.0      1.0E06   0.0     0.0     0.0     66  174     67  163      0.40
 73  100.0      1.0E06   0.0     0.0     0.0     76  185     77  174      0.40
 74  100.0      1.0E06   0.0     0.0     0.0     86  196     87  185      0.40
 76  100.0      1.0E06   0.0     0.0     0.0     16  119     17  108      0.40
 77  100.0      1.0E06   0.0     0.0     0.0     27  131     28  119      0.40
 78  100.0      1.0E06   0.0     0.0     0.0     37  142     38  131      0.40
 79  100.0      1.0E06   0.0     0.0     0.0     47  153     48  142      0.40
 80  100.0      1.0E06   0.0     0.0     0.0     57  164     58  153      0.40
 81  100.0      1.0E06   0.0     0.0     0.0     67  175     68  164      0.40
 82  100.0      1.0E06   0.0     0.0     0.0     77  186     78  175      0.40
 83  100.0      1.0E06   0.0     0.0     0.0     87  197     88  186      0.40
 85  100.0      1.0E06   0.0     0.0     0.0     17  120     18  109      0.40
 86  100.0      1.0E06   0.0     0.0     0.0     28  132     29  120      0.40
 87  100.0      1.0E06   0.0     0.0     0.0     38  143     39  132      0.40
 88  100.0      1.0E06   0.0     0.0     0.0     48  154     49  143      0.40
 89  100.0      1.0E06   0.0     0.0     0.0     58  165     59  154      0.40
 90  100.0      1.0E06   0.0     0.0     0.0     68  176     69  165      0.40
 91  100.0      1.0E06   0.0     0.0     0.0     78  187     79  176      0.40
 92  100.0      1.0E06   0.0     0.0     0.0     88  198     89  187      0.40
 94  100.0      1.0E06   0.0     0.0     0.0     18  121     20  110      0.40
 95  100.0      1.0E06   0.0     0.0     0.0     29  133     30  121      0.40
 96  100.0      1.0E06   0.0     0.0     0.0     39  144     40  133      0.40
 97  100.0      1.0E06   0.0     0.0     0.0     49  155     50  144      0.40
 98  100.0      1.0E06   0.0     0.0     0.0     59  166     60  155      0.40
 99  100.0      1.0E06   0.0     0.0     0.0     69  177     70  166      0.40
100  100.0      1.0E06   0.0     0.0     0.0     79  188     80  177      0.40
101  100.0      1.0E06   0.0     0.0     0.0     89  199     90  188      0.40
251
  1    1.0E03    5.0E02    5.0E04    1.0E00    0.0E00    1.0E02    1   21
  2    1.0E03    5.0E02    5.0E04    1.0E00    0.0E00    1.0E02   21   30
  3    1.0E03    5.0E02    5.0E04    1.0E00    0.0E00    1.0E02   30   39
  4    1.0E03    5.0E02    5.0E04    1.0E00    0.0E00    1.0E02   39   48
  5    1.0E03    5.0E02    5.0E04    1.0E00    0.0E00    1.0E02   48   57
  6    1.0E03    5.0E02    5.0E04    1.0E00    0.0E00    1.0E02   57   66
  7    1.0E03    5.0E02    5.0E04    1.0E00    0.0E00    1.0E02   66   75
  8    1.0E03    5.0E02    5.0E04    1.0E00    0.0E00    1.0E02   75   84
  9    1.0E03    5.0E02    5.0E04    1.0E00    0.0E00    1.0E02   84   93
 10    1.0E03    5.0E02    5.0E04    1.0E00    0.0E00    1.0E02    2   22
 11    1.0E03    5.0E02    5.0E04    1.0E00    0.0E00    1.0E02   22   31
 12    1.0E03    5.0E02    5.0E04    1.0E00    0.0E00    1.0E02   31   40
 13    1.0E03    5.0E02    5.0E04    1.0E00    0.0E00    1.0E02   40   49
 14    1.0E03    5.0E02    5.0E04    1.0E00    0.0E00    1.0E02   49   58
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15	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	58	67
16	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	67	76
17	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	76	85
18	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	85	94
19	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	93	102
20	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	94	103
21	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	3	23
22	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	23	32
23	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	32	41
24	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	41	50
25	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	50	59
26	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	59	68
27	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	68	77
28	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	77	86
29	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	86	95
30	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	95	104
31	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	4	24
32	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	24	33
33	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	33	42
34	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	42	51
35	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	51	60
36	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	60	69
37	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	69	78
38	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	78	87
39	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	87	96
40	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	96	105
41	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	5	25
42	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	25	34
43	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	34	43
44	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	43	52
45	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	52	61
46	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	61	70
47	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	70	79
48	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	79	88
49	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	88	97
50	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	97	106
51	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	6	26
52	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	26	35
53	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	35	44
54	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	44	53
55	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	53	62
56	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	62	71
57	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	71	80
58	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	80	89
59	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	89	98
60	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	98	107
61	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	7	27
62	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	27	36
63	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	36	45
64	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	45	54
65	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	54	63
66	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	63	72
67	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	72	81
68	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	81	90
69	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	90	99
70	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	99	108
71	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	8	28
72	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	28	37
73	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	37	46
74	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	46	55
75	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	55	64
76	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	64	73
77	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	73	82
78	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	82	91
79	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	91	100
80	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	100	109

81	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	9	29
82	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	29	38
83	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	38	47
84	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	47	56
85	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	56	65
86	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	65	74
87	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	74	83
88	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	83	92
89	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	92	101
90	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	101	110
91	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	10	11
92	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	11	12
93	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	12	13
94	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	13	14
95	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	14	15
96	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	15	16
97	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	16	17
98	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	17	18
99	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	18	19
100	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	19	20
101	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	1	2
102	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	21	22
103	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	30	31
104	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	39	40
105	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	48	49
106	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	57	58
107	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	66	67
108	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	75	76
109	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	84	85
110	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	93	94
111	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	102	103
112	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	2	3
113	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	22	23
114	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	31	32
115	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	40	41
116	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	49	50
117	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	58	59
118	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	67	68
119	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	76	77
120	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	85	86
121	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	94	95
123	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	103	104
124	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	3	4
125	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	23	24
126	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	32	33
127	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	41	42
128	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	50	51
129	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	59	60
130	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	68	69
131	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	77	78
132	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	86	87
133	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	95	96
134	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	104	105
135	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	4	5
136	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	24	25
137	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	33	34
138	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	42	43
139	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	51	52
140	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	60	61
141	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	69	70
142	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	78	79
143	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	87	88
144	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	96	97
145	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	105	106
146	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	5	6
147	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	25	26

148	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	34	35
149	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	43	44
150	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	52	53
151	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	61	62
152	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	70	71
153	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	79	80
154	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	88	89
155	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	97	98
156	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	106	107
157	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	6	7
158	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	26	27
159	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	35	36
160	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	44	45
161	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	53	54
162	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	62	63
163	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	71	72
164	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	80	81
165	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	89	90
166	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	98	99
167	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	107	108
168	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	7	8
169	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	27	28
170	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	36	37
171	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	45	46
172	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	54	55
173	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	63	64
174	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	72	73
175	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	81	82
176	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	90	91
177	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	99	100
178	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	108	109
179	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	8	9
180	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	28	29
181	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	37	38
182	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	46	47
183	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	55	56
184	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	64	65
185	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	73	74
186	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	82	83
187	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	91	92
188	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	100	101
189	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	110	109
190	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	9	10
191	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	29	11
192	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	38	12
193	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	47	13
194	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	56	14
195	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	65	15
196	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	74	16
197	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	83	17
198	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	92	18
199	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	101	19
200	1.0E03	5.0E02	5.0E04	1.0E00	0.0E00	1.0E02	110	20

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/*